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(54) Educational aid for teaching computer programming.

(57) An educational aid for use in teaching computer programming comprises a tray (1-Fig. 1) having rows of compartments (3), each adapted to contain a supply of identical labels having thereon a visible binary code in the form of a bar code. The compartments (3) in the rows (4) at one end of the tray (1) are disposed in an array corresponding to the keyboard of a typical keyboard input terminal for containing binary coded labels representing the characters and symbols of a keyboard in a similar sequence. The aid also includes a coding board (27-Fig. 5) having a multiplicity of rows of pockets (24) for holding individual binary coded labels selected from the tray (1) and disposed in the pockets (24) in a required sequence to produce a computer program. Each pocket (24) has a window (25) at its front face through which a coded label inserted into the pocket (24) can be read by a scanning device.

**EP 0 069 522 A1**

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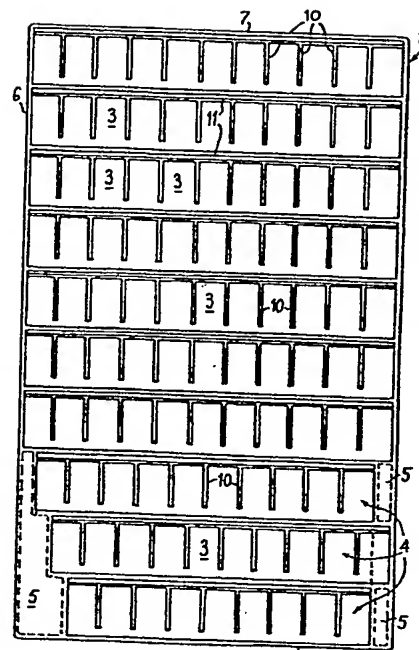


Fig. 1

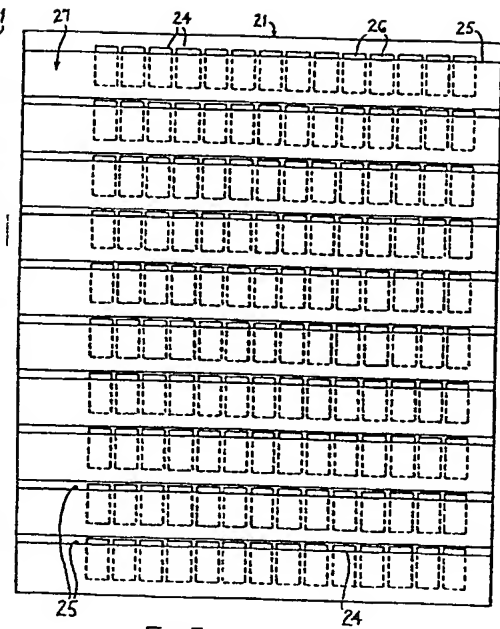


Fig. 5

EDUCATIONAL AID FOR TEACHING COMPUTER PROGRAMMING

1           The present invention relates to an educational  
aid for use in teaching computer programming to students  
and, more particularly, to such an aid for use in  
initiating younger students into the techniques of  
5 computer programming.

          The present invention consists in an educational  
aid for use in teaching computer programming, comprising,  
in combination, a tray having a multiplicity of rows of  
compartments, each adapted to contain a supply of  
10 identical labels having thereon a visible binary code,  
at least some of the rows of compartments at one end of  
the tray being disposed in an array corresponding to  
the keyboard of a typical keyboard input terminal for  
containing binary coded labels representing the characters  
15 and symbols of a keyboard in a similar sequence,  
and a coding board having a multiplicity of rows of  
pockets for holding individual binary coded labels  
selected from the tray and disposed in the pockets in  
a required sequence to produce a computer program, each  
20 pocket having a window at its front face through which  
a coded label inserted into the pocket can be read by  
a scanning device. The binary code used on the labels  
is preferably of the kind commonly referred to as a bar  
code.

25           With the invention, a student may compile a  
computer program by simply selecting appropriate labels  
from the tray and disposing them in a desired sequence  
along the rows of pockets in the coding board. The  
resulting program may be entered into a suitable computer  
30 by scanning the labels in the pockets in the appropriate  
sequence with a manual light-reader which reads the  
binary codes on the labels in the pockets and feeds  
corresponding binary signals into the computer.

          Conveniently, each compartment of the tray is  
35 labelled with a human-readable keyword, character or symbol

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1 identifying the coded labels intended to be contained  
in the compartments. For example, it may have a zone in  
a readily visible position on one of its walls adapted  
to receive an adhesive paper strip displaying the key-  
5 word or character. Each label preferably has the corres-  
ponding human-readable keyword or character printed on it  
to identify the label. The labels and the compartments,  
or labelling strips attached to the compartments, may be  
colour coded to facilitate selection and replacement of  
10 labels.

The tray may have a cover or lid which fits over  
the tray to close the compartments. This lid is prefer-  
ably provided on its inside with means which, when the lid  
is fitted on to the tray, prevents the coded labels from  
15 being inadvertently dislodged from their correct compart-  
ments and becoming mixed.

The invention also consists in a tray or coding  
board for use in the educational aid according to the  
invention.

20 In order that the invention may be more readily  
understood, reference will now be made to the accompany-  
ing drawings, in which:-

Figs. 1 and 2 respectively illustrate a plan  
view and a longitudinal sectional view of a tray according  
25 to the invention,

Figs. 3 and 4 respectively illustrate an under-  
neath plan and a side elevation of a lid for the tray  
shown in Figs. 1 and 2,

Figs. 5 and 6 respectively illustrate a plan view  
30 and a longitudinal sectional view of a coding board  
according to the invention and,

Fig. 7 illustrates a sample label for use with  
the invention.

Referring to Figs. 1 and 2 of the drawings, the  
35 tray 1 is of rectangular shape in plan and comprises a

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1 plurality of rows of identical compartments 3 extending  
width-wise of the tray. Apart from three rows 4 of  
compartments at one end of the tray, the rows extend  
across the full width of the tray. The three rows 4  
5 at said one end of the tray are arranged in an array  
corresponding to the keyboard of a typical keyboard  
input terminal for a computer and are intended to contain  
coded labels representing the letters and numbers of a  
typical keyboard, for example, a QWERTY keyboard, in an  
10 identical sequence. The three rows 4 have less numbers of  
compartments than the other rows and the tray has lands 5  
at the ends of these rows to compensate for the reduced  
numbers of compartments.

As shown more particularly in Fig. 2, the tray  
15 comprises side and end walls 6,7 enclosing a central  
portion of corrugated configuration. The corrugations  
8,9 extend parallel to the end walls 7. The upwardly  
projecting corrugations 8 are of V-shaped section whilst  
the downwardly projecting corrugations or troughs 9,  
20 which contain the compartments 3, are of frusto V-shape  
section. The troughs 9 are divided into the individual  
compartments 3 by partitions 10 extending longitudinally  
of the tray and part-way up the height of the troughs.  
Except for the three rows 4, the partitions 10 are  
25 aligned in columns. The marginal zones along the top  
front faces of the corrugations 8 are formed with shallow  
rebates 11 for receiving self-adhesive strips displaying  
human-readable keywords, characters or symbols identify-  
ing the coded labels to be inserted in the individual  
30 compartments.

In use, each of the compartments contains a supply  
of identical labels having printed thereon a visible  
binary code, such as a bar code, representing a selected  
computer keyword, character or symbol. A sample label,  
35 which is preferably formed from anti-static material, is

1 illustrated in Fig. 7. A bar code is printed at 12 and  
the corresponding human-readable keyword is printed in  
the zone 13. The zone 13 may also be coloured in accord-  
5 ance with a colour coding used on the identifying strips  
attached to the rebates 11 of the compartments to facilitate  
selection and replacement of labels in the compartments.  
The labels may be supplied in perforated sheets so that  
individual labels can readily be separated and lodged in  
the appropriate compartments of the tray. They are stacked  
10 one behind the other in their compartments and normally  
rest face downwards against the front walls of the compart-  
ments so that the keywords etc. displayed along the rebates  
11 are visible.

Figs. 3 and 4 illustrate the lid 14 for the tray 1.  
15 It is of rectangular shape in plan and comprises a top  
15 and downwardly projecting side and end flanges 16.  
Small tapered ribs 17 are formed on the insides of the  
end flanges and engage with the outsides of the end  
walls 7 of the tray, which may also taper slightly inwards,  
20 when the lid is fitted onto the tray so as to provide an  
interference fit between the lid and tray for retaining  
the lid in position. Projecting downwardly from the top  
of the lid in positions corresponding to the troughs 9  
of the tray are a plurality of webs 18. These webs  
25 extend parallel to the end flanges of the lid and terminate  
short of the side walls 6 and lands 5 of the tray so  
that when the lid is fitted onto the tray, the top 15 of  
the lid engages the walls 6,7 and lands 5 of the tray  
and the bottom edges of the webs 18 substantially engage  
30 the tops of the tray partitions 10. These webs 18 co-  
operate with the partitions 10 to prevent the labels  
from inadvertently being dislodged from their correct  
compartments and becoming mixed when the closed tray is  
handled. Hollow ribs 19 extending width-wise of the lid  
35 are formed on the outside of the lid top 15 adjacent

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1 opposite ends. In a stack of closed trays, these ribs  
engage the insides of the end walls 7 of the next tray  
above to stabilise the stack. When the tray is in use,  
the lid is fitted to the underneath of the tray, to  
5 avoid it being mislaid or causing a nuisance, and serves  
as a base for the tray. A shallow recess (not shown)  
may be formed on the outside of the lid top for receiving  
an adhesive label identifying the contents of the closed  
tray and a shallow recess 20 (Fig. 1) for a similar  
10 purpose may also be formed on one end wall of the tray.  
The tray 1 and the lid 14 may be produced as plastics  
mouldings.

The coding board 21 illustrated in Figs. 5 and 6  
is of laminated construction and may be produced from  
15 plastics laminations. It is of rectangular shape in  
plan and comprises a base card or layer 22, a collator  
layer 23 superimposed on and bonded to the base layer  
and defining a plurality of rows of rectangular openings  
24 of sufficient size to contain coded labels selected  
20 from the tray 1, and a plurality of transparent strips  
25 fastened to the front face of the collator layer 23  
in positions over the rows of openings. The strips 25 are  
disposed with their top edges spaced a short distance  
below the top edges of the openings 24 in the collator  
25 layer so as to provide gaps 26 through which the coded  
labels can be inserted into the flat pockets defined  
between the strips and the openings in the collator layer.  
The strips are secured in position by bonding along bottom  
and end margins of the strips.

30 When labels are inserted into the pockets, they fit  
snugly in the pockets with the zones 13 (Fig. 7) projecting  
from the gaps 26 onto the surfaces of the transparent strips  
25, or the top end land portion of the collator layer,  
immediately above the pockets. This facilitates removal  
35 of the labels from the pockets.

1       The pockets are offset towards the right-hand side  
of the board 21, as viewed in Fig. 5, to provide a wider  
substantially flat marginal zone 27 on the left-hand side  
5       of the board. When scanning the labels placed in the  
pockets, a light reader is moved from left to right  
along the rows and the wide left-hand marginal zone 27  
provides an acceleration zone of satisfactory width  
to permit the light reader to be accelerated to an appropriate speed to achieve correct reading of the bar codes  
10       before scanning the first label in each row.

In order to produce a program, the required labels  
are selected from the compartments 3 in the tray 1 and  
are inserted into the pockets in the coding board 21 in  
a required sequence and along successive rows of the  
15       board. The program thereby compiled can be entered into  
a suitable computer by successively scanning the labels  
in the rows, through the transparent strips 25, with a  
hand-held light reader which reads the bar codes on the  
labels and supplies corresponding binary data to the  
20       computer. The reader is traversed along successive rows  
in contact with the strips 25 which provide flat transparent surfaces for scanning purposes. When the program  
has been entered in the computer, the labels may be removed  
from the coding board 21 and be replaced in their appropriate compartments in the tray and another program may  
25       be compiled and entered into the computer in a similar manner.

Whilst a particular embodiment has been described,  
it will be understood that modifications can be made  
30       without departing from the scope of the invention. For  
example, a transparent layer having slots cut or stamped  
in positions corresponding to the gaps 26 may be adhered  
to the collator layer 23 in place of the strips 25 in  
order to form the pockets in the coding board.



CLAIMS

1. An educational aid for use in teaching computer programming, characterised in that it comprises, in combination, a tray (1) having a multiplicity of rows of compartments (3), each adapted to contain a supply  
5 of identical labels (Fig. 7) having thereon a visible binary code (12), at least some of the rows (4) of compartments (3) at one end of the tray being disposed in an array corresponding to the keyboard of a typical input terminal for containing binary coded labels rep-  
10 resenting the characters and symbols of a keyboard in a similar sequence, and a coding board (21) having a multiplicity of rows of pockets (24) for holding individual binary coded labels selected from the tray (1) and disposed in the pockets in a required sequence to produce  
15 a computer program, each pocket (24) having a window (25) at its front face through which a coded label inserted into the pocket can be read by a scanning device.
2. An educational aid as claimed in claim 1, wherein the binary code (12) used on the labels (Fig. 7) is a  
20 bar code.
3. An educational aid as claimed in claim 1 or 2, wherein each compartment (3) of the tray (1) is labelled, or adapted to be labelled, with a human-readable keyword, character or symbol identifying the coded labels intended  
25 to be contained in the compartments.
4. An educational aid as claimed in claim 3, wherein each compartment (3) has a zone (11) in a readily visible position on one of its walls adapted to receive an adhesive paper strip displaying the keyword or character.
- 30 5. An educational aid as claimed in any preceding claim,

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wherein each label (Fig. 7) has the corresponding human-readable keyword or character printed on it to identify the label, the labels and the compartments (3) also being colour coded to facilitate selection and replacement of labels.

6. An educational aid as claimed in any preceding claim, wherein the tray (1) has a lid (14) which fits over the tray to close the compartments, the lid being provided on its inside with means (18) which, when the lid is fitted on to the tray, prevents the coded labels from being inadvertently dislodged from their correct compartments and becoming mixed.

7. An educational aid as claimed in any preceding claim, wherein the coding board (21) includes a zone devoid of pockets at one end of the rows of pockets (24) to provide an acceleration zone to permit, in operation, the scanning device to be accelerated to a speed to achieve correct reading of the codes on the labels in the pockets in the rows before scanning the first label in each row.

8. An educational aid as claimed in any preceding claim, wherein the tray (1) includes a central corrugated portion defining the rows of compartments (3), the corrugations being mutually parallel, and being defined by upwardly projecting, inverted generally V-shaped portions (8) and downwardly projecting generally frusto V-shaped portions (9), the troughs defined by the corrugation portions (8, 9) being divided into the individual compartments (3) by partitions (10) extending part-way up the height of the troughs.

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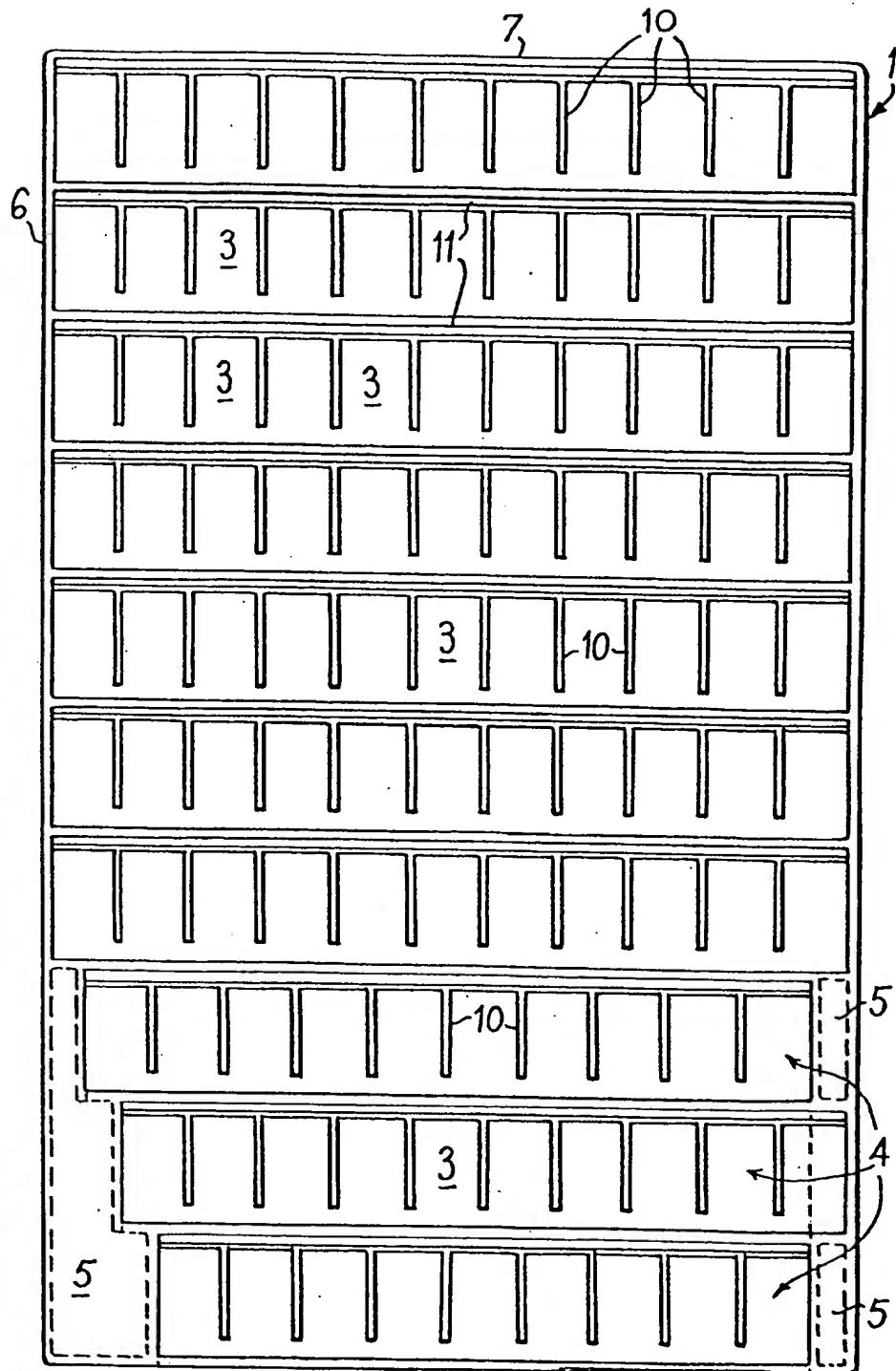


Fig. 1

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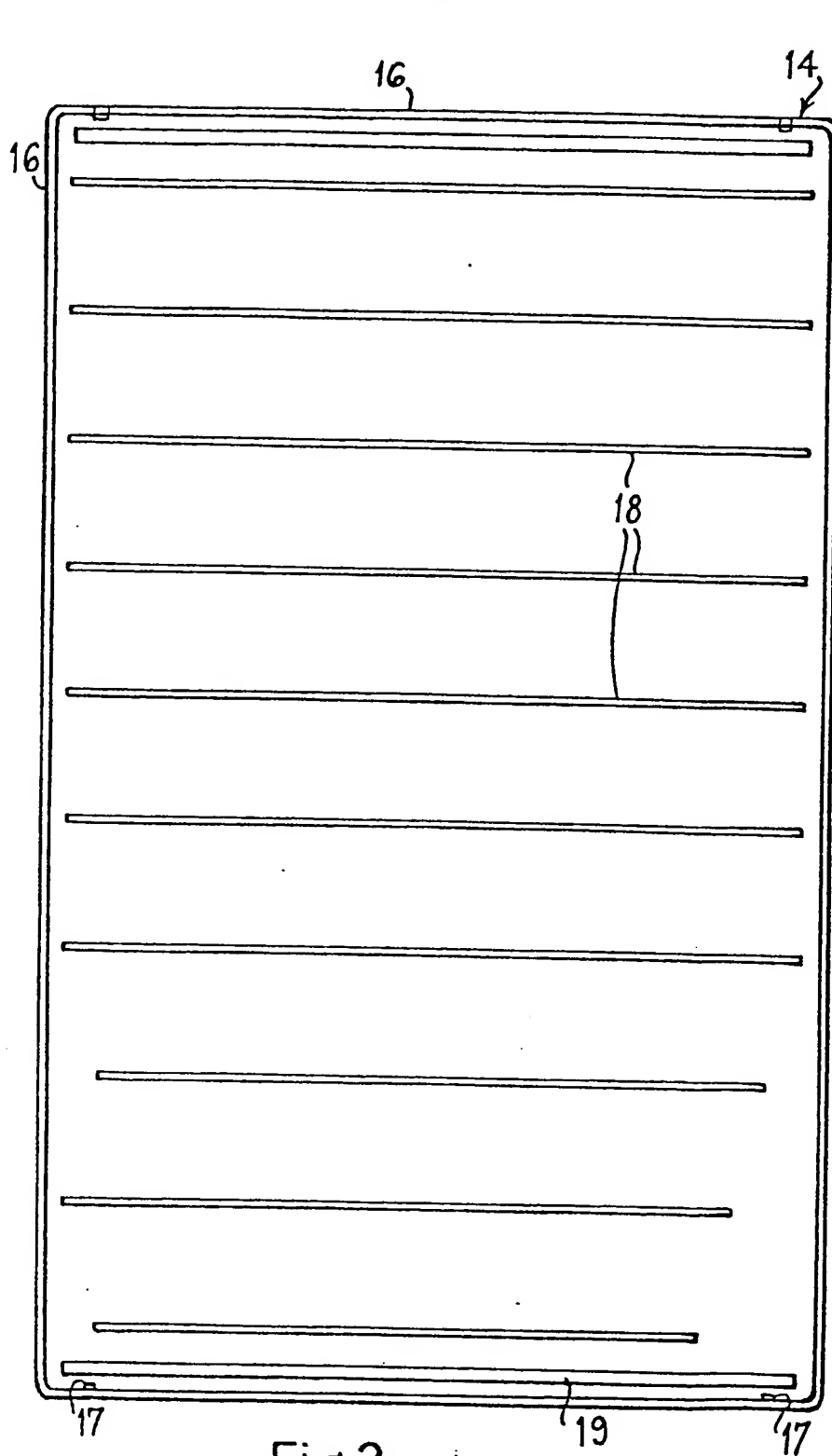


Fig.3

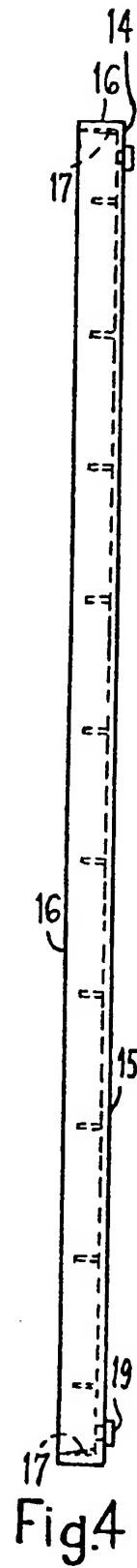


Fig.4

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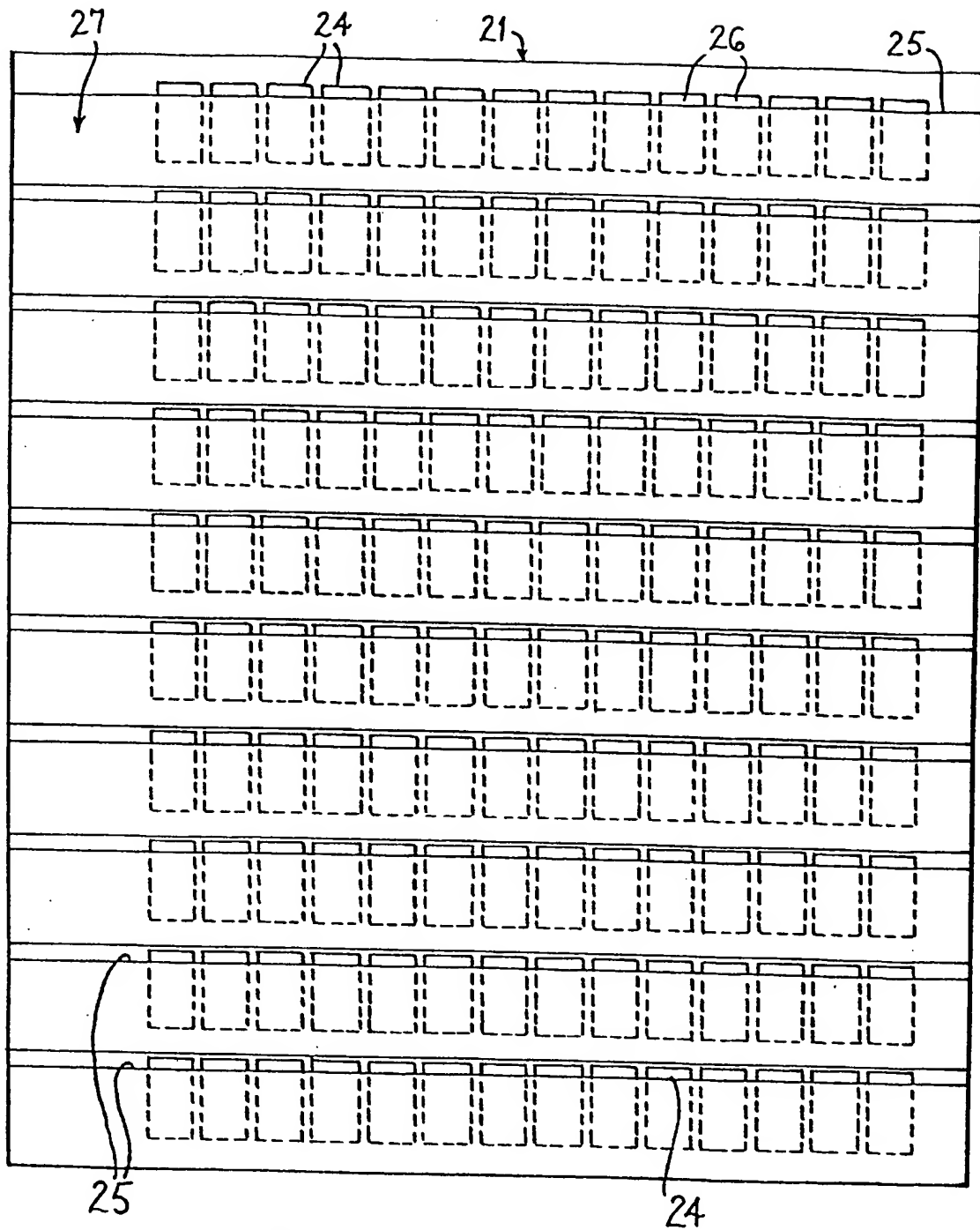


Fig. 5

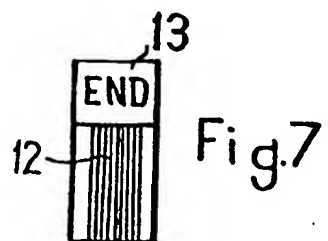


Fig. 7

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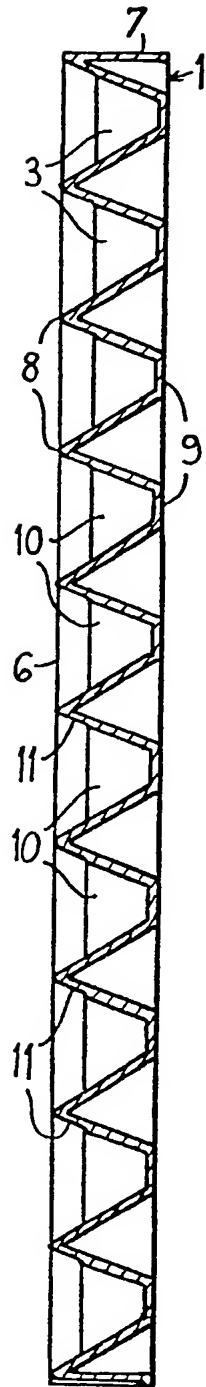


Fig. 2

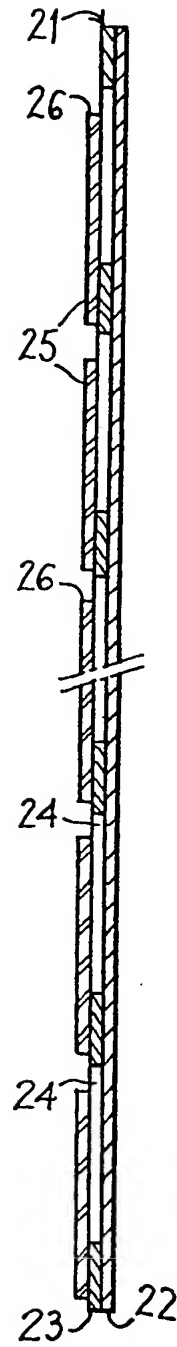


Fig. 6



European Patent  
Office

# EUROPEAN SEARCH REPORT

0069522

Application number

EP 82 30 3387.3

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	US - A - 4 176 474 (R. O'SULLIVAN) * column 1, lines 37 to 43 *	1,3,5	G 09 B 19/00
A	GB - A - 1 450 225 (C.A. TACEY) * page 1, lines 19 to 37 *	1,3,5	
A	GB - A - 1 503 671 (J.H.M. MARTIN) * page 1, lines 9 to 39 *		
A	US - E - 28 763 (A. EPSTEIN) * column 1, lines 39 to 65 *		TECHNICAL FIELDS SEARCHED (Int.Cl.3)  G 09 B 1/00 G 09 B 19/00 G 09 B 29/00 G 09 D 1/00 G 09 F 7/00
			CATEGORY OF CITED DOCUMENTS  X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons
Y The present search report has been drawn up for all claims			S: member of the same patent family, corresponding document
Place of search Berlin		Date of completion of the search 26-08-1982	Examiner BOTTERILL

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